



Project Update

Fields Brook Superfund Site

Ashtabula, Ohio

November 1998

You are invited to a public meeting

The U.S. EPA will hold a public meeting to give you an update on activities at the Fields Brook Superfund Site. The public meeting will be held on **November 19, 1998 at 7:00 p.m.** at the

Ashtabula Area Chamber of Commerce

Culver Conference Center
4536 Main Avenue
Ashtabula, Ohio

Free parking is available in the deck behind the building; enter off 46th Street.

Summary

This fact sheet describes the modifications to the Fields Brook Superfund Site cleanup plan that the U.S. Environmental Protection Agency (U.S. EPA) believes are necessary to address radium in soil and sediment at and near the Millennium Inorganic Chemical Company's titanium tetrachloride (TiCl_4) facility at the Fields Brook Superfund Site (see Figure 1).

The radium in soil and sediment at and near the Millennium TiCl_4 facility requires the following changes to the cleanup plan for the Fields Brook site:

- 1) establishing radium cleanup levels for soil and sediment for both the residential and industrial portions along Fields Brook.
- 2) excavating soil and sediment that is contaminated with radium at levels above the cleanup level.
- 3) eliminating the requirement for off-site thermal treatment (incineration) of sediment with elevated levels of radionuclides. Instead, the contaminated sediment will be stabilized, solidified and

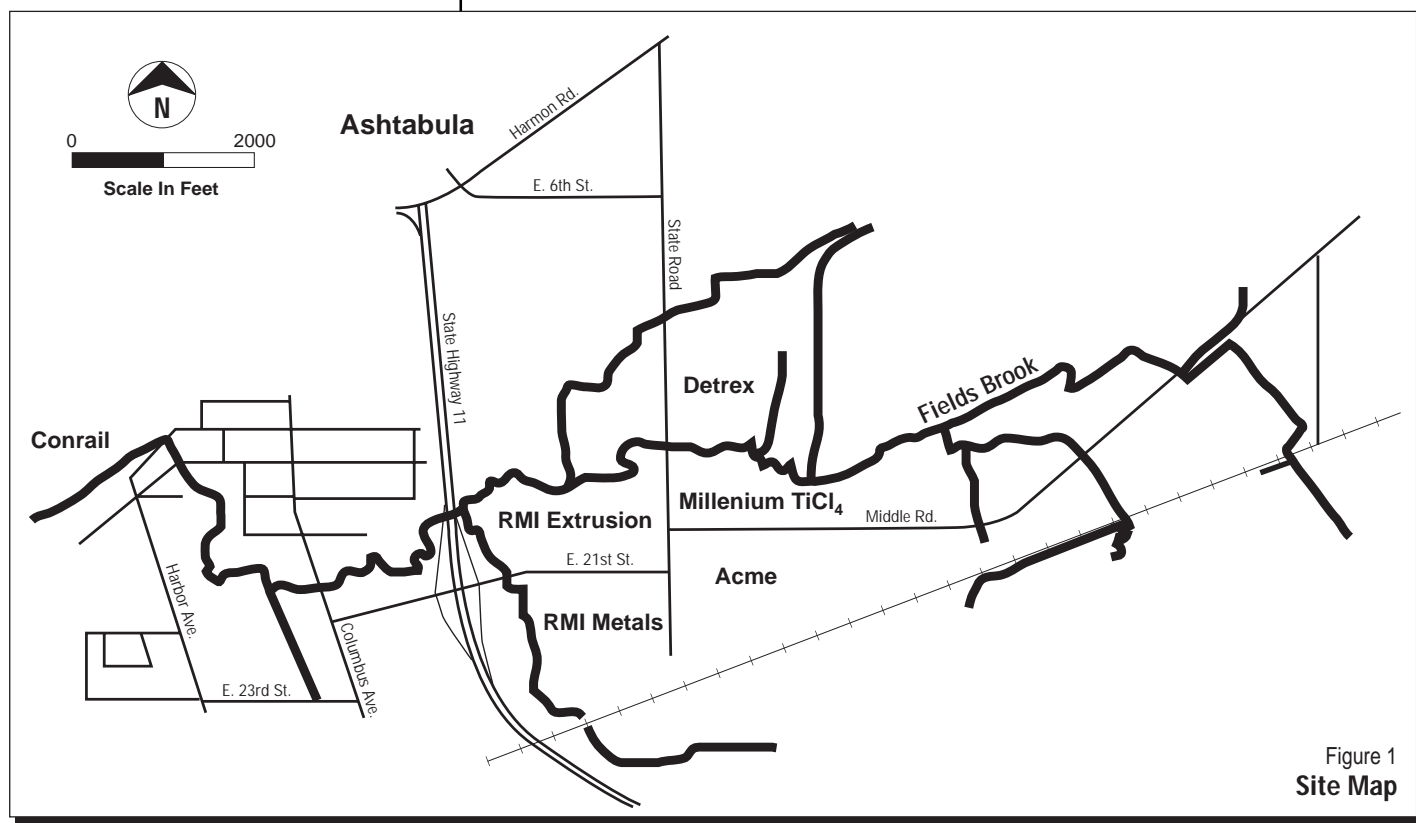


Figure 1
Site Map

disposed in the on-site landfill that will be constructed on the property currently owned by the RMI Sodium Company.

- 4) design modification of the on-site landfill to be built at RMI Sodium. Implementing long-term monitoring of air emissions and the ground water around the on-site landfill for radionuclides.
- 5) evaluating the existing Millennium industrial waste landfill to determine its suitability for disposal of radium-contaminated ore-processing residuals from the Millennium TiCl_4 facility.

The U.S. EPA has scheduled a Project Update Meeting on November 19, 1998 to discuss the issues presented in this fact sheet (see sidebar on page 1).

Site History

The Fields Brook site is located in Ashtabula County, approximately 55 miles east of Cleveland, Ohio. U.S. EPA is the lead agency for conducting the remedial action at the site. The sediment in Fields Brook and the soil in the floodplain/wetland area are contaminated with a wide variety of contaminants including polychlorinated biphenyls (PCBs), chlorinated solvents and metals. For additional site history, please see previously issued fact sheets and other site-related materials available at the information repositories listed in the "Additional Information" section.

What is a radionuclide?

Radionuclide is a general term for all radioactive material. Uranium, radium, and thorium are all radionuclides.

What's New?

In 1998, U.S. EPA received information that caused it to re-evaluate major clean up design assumptions. In January 1998, Dr. Michael E. Ketterer, Ph.D., submitted a grant proposal requesting funds from U.S. EPA's Great Lakes National Program Office to continue his independent study of radionuclide contamination in the Ashtabula River. Dr. Ketterer submitted sampling data that showed elevated levels of uranium in the Ashtabula River at the location where Fields Brook discharges into the river. A copy of the data was provided to the U.S. EPA Region 5 Superfund Division for review. After a review of Dr. Ketterer's radionuclide sampling data and the historic radionuclide data for Fields Brook, U.S. EPA determined that the Millennium Inorganic Chemical Company's TiCl_4 production facility was a likely source for additional radionuclide contamination.

Millennium Inorganic Chemical Co. - TiCl_4 Production Facility

Millennium produces titanium dioxide (TiO_2) and titanium tetrachloride (TiCl_4) at its Ashtabula manufacturing facilities. TiO_2 is a non-toxic pigment for paint, paper, and plastics. TiCl_4 is used as an intermediate product in the production of titanium metal for the aerospace industry and for the production of TiO_2 .

U.S. EPA has determined that the PCB contamination at the millennium facility has the potential to recontaminate Fields Brook and must be cleaned up. The Millennium TiCl_4 facility utilizes titanium ores that have natural levels of radionuclides, including radium. These ores are generally mined in Australia and Canada and are shipped to the Millennium facility for processing. The ore is

sampled to verify that the uranium and thorium content meets Millennium's specifications and is below the levels that allow unregulated industrial use. During Millennium's manufacturing process, radionuclides are concentrated in the residual materials. The byproducts of Millennium's process therefore belong in the category of technically enhanced naturally occurring radioactive material.

The ore-processing residuals, containing natural levels of radionuclides, were dumped and back-filled with soil at the Millennium facility prior to 1976 by a previous owner. This disposal area is currently included in the Superfund cleanup of the Millennium property because of the high levels of PCBs found in the area. While the use of PCBs is not part of the actual manufacturing process, PCBs were used in a heat transfer system from 1958 to 1974. Current process materials from Millennium's facility are disposed of in Millennium's industrial waste landfill located on Cook Road in Ashtabula.

RMI Titanium Company Extrusion Plant

From 1962 to 1990, RMI Extrusion processed ferrous and non-ferrous metal into rods, tubing and other shapes. The non-ferrous metals included uranium, copper, beryllium, zirconium, titanium, nickel and molybdenum. The U.S. Department of Energy is currently cleaning up the RMI Extrusion facility, with oversight by the Nuclear Regulatory Commission (NRC). The RMI facility is contaminated with uranium and technetium and was a possible source of radionuclide contamination to the brook and Ashtabula River. As part of the Sediment Operable Unit's ESD and the Floodplain/Wetland Area ROD, U.S. EPA set cleanup criteria

for the brook sediment and floodplain/wetland soil to address radionuclide contaminants believed contributed by RMI Extrusion. The NRC is in the process of setting cleanup criteria for areas over which they have regulatory responsibility.

Why Wasn't the Radium Contamination Discovered Before 1998?

Because Millennium does not use ore that contains levels of radioactive material that is regulated, U.S. EPA did not consider the facility as a possible source of radionuclides to the brook. U.S. EPA's previous radionuclides sampling and analysis had centered on those radionuclides that would be associated solely with RMI's process. U.S. EPA should have previously identified Millennium's plant as a potential source of radionuclides because its manufacturing process uses titanium ore as a raw material. The design modifications discussed later in this fact sheet are meant to address the previous omission of the plant as a potential source of radionuclides to the brook.

Results from 1998 Site Screening and Radionuclide Sampling

In May 1998, a U.S. EPA health physicist conducted a radiation survey at the Fields Brook Site. This survey used a screening instrument (a gamma scintillation detector) to map areas along Fields Brook that were emitting radiation. The radiation survey confirmed that the Millennium facility contains radionuclides at levels above what would normally be expected in northeast Ohio soils.

In July 1998, U.S. EPA and the Fields Brook Action Group (FBAG)—the group of companies that will fund and conduct the de-

sign and cleanup of Fields Brook and the floodplain/wetland—collected samples of soil and sediment from the Millennium facility and Fields Brook. Sample locations were selected after identifying areas emitting elevated levels of radiation. Since the sample locations were biased towards areas that had been screened as having an elevated level of radiation, the samples represent a conservative, or high, estimate of the radionuclide contamination in the brook sediment and the soil at and near Millennium. Samples were analyzed for a broad range of radionuclides to ensure that the U.S. EPA would have a complete understanding of the types of radiation present at the site. The results of the July 1998 sampling found:

- A maximum of 73 picocuries per gram (pCi/g) radium (combined radium-226 + radium-228) in Millennium's mining residual piles. A picocurie is a measure of radioactive concentration.
- An approximate range of 6 to 46 pCi/g radium (combined radium 226 + radium 228) in the soil of the floodplain/wetland area adjacent to Millennium, with the highest levels generally found in surface soil.
- Radium levels in the sediment in Fields Brook near Millennium are above background levels (1.7 pCi/g combined radium-226 + radium-228), with a maximum of 7.4 pCi/g radium (combined radium 226 + radium 228).

U.S. EPA's evaluation of the uranium and thorium results is not yet complete. After the U.S. EPA has reviewed all of the data, the results of the uranium and thorium analyses will be presented to the public. U.S. EPA will also provide a discussion of the health implications of the uranium and thorium results.

Is the Radium Dangerous?

Radionuclides, including radium, are known carcinogens. Eating, breathing, and being exposed to gamma radiation emitted by the radium-contaminated soil and sediment could lead to an increased risk of cancer. Eating radium can lead to cancers of the bone and sinuses. Breathing of radium can increase the risk of lung cancer. Long-term exposure to gamma radiation can increase the risk of cancers throughout the body.

Sampling conducted in July 1998 showed that the radium contamination appears to be primarily limited to the industrial portion of the Fields Brook watershed, at and near the Millennium property. The extent of radium contamination will be determined prior to site cleanup and the areas of excavation will be adjusted accordingly.

The levels of radioactivity, primarily from the radium, measured at and near Millennium are not associated with any immediate health effects but would be associated with increased chances of cancer appearing years, or possibly decades, after long-term exposure. Based on the July 1998 sampling, it appears that radium contamination does not pose a risk to area residents. The radium contamination appears to be associated with the mining residuals that are located at the Millennium facility. Erosion has moved some of the radium contamination into the soil adjacent to the Millennium facility and the Fields Brook sediment. However, radium levels do not appear to be significantly elevated in brook sediment or floodplain/wetland area soil that are not in close proximity to the Millennium facility.

The radium found in the mining residuals at the TiCl_4 facility may

pose a long-term chronic risk to Millennium workers if they routinely come into contact with the contaminated material. However, because of the PCB contamination, the mining residual area is not used by Millennium and is not routinely frequented by Millennium workers.

What About the Uranium Found by Dr. Ketterer?

Both the U.S. EPA and the Ashtabula River Partnership have been aware of elevated levels of uranium in Fields Brook sediment and the sediment of the Ashtabula River. When Dr. Ketterer's data was received, the Ashtabula River Partnership was concerned with the higher levels that he had found in river sediment and conducted follow-up sampling. U.S. EPA and FBAG also conducted additional radionuclide sampling to further delineate levels of uranium in the brook. See "Results from 1998 Site Screening and Radionuclide Sampling" on page 3.

U.S. EPA will require confirmation of radionuclide levels before the cleanup is conducted in the brook. The Ashtabula River Partnership will verify radionuclide levels in the river prior to the dredging of sediment.

How Will U.S. EPA Change the Cleanup Plan?

U.S. EPA waited on modifying the clean up plan until enough information had been collected and analyzed to address the radionuclide contamination. U.S. EPA determined that radium should be added as a contaminant of concern for the cleanup of the Millennium facility and for the Fields Brook sediment and the floodplain/wetland area soil. In addition, because of the presence of radium, specific components of the remedial action will need to be modified for soil and sediment that contain radium:

- Off-site thermal treatment (incineration) is currently planned for sediment contaminated with PCBs and other organic compounds. However, thermal treatment is not appropriate for sediment that contains elevated levels of radionuclides (including radium). For sediment with low levels of radionuclides, off-site thermal treatment will proceed as planned. For sediment with elevated levels of radionuclides, the contaminated sediment will instead be chemically stabilized and solidified prior to disposal in the on-site landfill.
- Millennium's planned on-site landfill that will be built to contain contaminated sediment and soil will be upgraded to ensure that radionuclide contaminants do not move from the landfill. Monitoring wells around the landfill will be routinely sampled, and the samples will be analyzed for contaminants of concern, including radium. Air monitoring will be performed at the landfill to ensure that contaminants of concern, including radon gas, do not present any risk to human health.
- U.S. EPA has determined that the Millennium industrial waste landfill is sufficiently designed to contain the PCB-contaminated soil from the Millennium TiCl_4 facility. In order to resolve the issue of contamination at the TiCl_4 facility, Millennium has offered to excavate virtually all PCB-contaminated soil from the property.

Millennium's current cleanup plan exceeds the cleanup requirements established by U.S. EPA. However, the design of the industrial waste landfill is currently being reviewed to ensure that it is appropriate for disposal of the radium-contaminated mining residuals.

- Additional soil and sediment will be excavated, as necessary, from residential portions of the site to meet the residential radium cleanup level of 5 pCi/g above background, for combined levels of radium-226 and radium-228. The cleanup plan already includes cleanup levels for uranium.
- Additional soil and sediment will be excavated, as necessary, from the site to meet the industrial radium cleanup level. The U.S. EPA is currently developing an appropriate and protective industrial cleanup level for radium (combined radium 226 + radium 228). This industrial cleanup level will be presented to the public as soon as it is available.

How Does the Discovery of Radium Impact the Fields Brook Cleanup Schedule?

In order to address the radium contamination, the cleanup schedule for Fields Brook has to be modified:

- It is expected that the Conrail source control area cleanup will be completed in the next few months, ahead of schedule. Conrail is exceeding the requirements set by the ROD, by excavating arsenic-contaminated soil from its property and disposing in an off-site landfill.

- The cleanups for the remaining five of the six source control areas are still planned to start in 1999. Millennium's cleanup is expected to exceed U.S. EPA's requirements for cleanup.
- The construction of the millenium on-site landfill will be delayed to accommodate the addition of clay to the liner and the cap. The actual construction of the landfill is expected to start in late 1999 or early 2000. The landfill will be ready to accept the disposal of contaminated soil and sediment by late summer 2000.

The cleanup of Fields Brook and the adjacent contaminated flood-plain/wetland soil will proceed when the landfill is ready to accept the contaminated soil and sediment. While the landfill is being constructed, preparations will be made to facilitate the cleanup (i.e., constructing haul roads, clearing brush).

Could Anything Else Have Been Missed?

Although previous radionuclide sampling focused on the types of contamination resulting from operations at the RMI Extrusion facility, the recent sampling by U.S. EPA and FBAG looked for a wider range

of radionuclides. In addition, the chemical sampling performed to date has been very broad to include volatile organic compounds, semi-volatile organic compounds and inorganics (metals). Because U.S. EPA wants to ensure the protection of human health and the environment, required five-year reviews will be conducted at all the sites after the cleanup. U.S. EPA is working with the Ohio Department of Health, Bureau of Radiation Protection to resolve the contamination problem. U.S. EPA also has the authority to require supplemental cleanups should a risk be identified.

FOR ADDITIONAL INFORMATION

Anyone interested in learning more about the Fields Brook Superfund site, or the Superfund process in general, is encouraged to review documents in the information repositories located at:

Ashtabula County District Library
335 West 44th Street
Ashtabula, Ohio

Kent State Campus Library
3325 West 13th Street
Ashtabula, Ohio

If you have questions about the information in this fact sheet or would like additional information about the Fields Brook site, please write or call the individuals listed below:

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<http://www.epa.gov/region5>

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If you did not receive this fact sheet in the mail, you are not on the mailing list for the Fields Brook Superfund Site. To add your name, or to make a correction, please fill out this form and mail it to:

Denise Gawlinski

U.S. EPA Region 5
Office of Public Affairs (P-19J)
77 West Jackson Boulevard
Chicago, Illinois 60604

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Once you are on the mailing list, you will automatically receive information from U.S. EPA regarding the Fields Brook Superfund Site.



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